

REMARKS

The foregoing amendments do not involve new matter. The amendment to the specification corrects one additional typographical error in the original specification. The amendment to claim 28 incorporates material from claim 36. The cancellation of claims 1-27 and 35, and the amendment of claim 28, is made without prejudice to presenting those claims in their original form in a continuing application.

Examiner Kramer is thanked for the courtesy of a telephone interview with the below signed attorney on June 25, 2007. During that interview, only claim 28 was discussed, and only the article by Lawrence Kren entitled "Machined Springs are cut out for custom jobs" (Kren) was discussed. Applicants' attorney acknowledged that modifying a spring rate, *per se*, is not new; the prior art teaches several methods of modifying spring rates, such as shorting out coils. A proposed amendment, incorporating the changes to claim 28 above, was discussed conceptually with the Examiner, and was later sent to the Examiner on July 3, 2007. Arguments presented during the interview are included in the remarks below. No agreement was reached.

In the outstanding Office Action, claims 28, 31, 33 and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,696,320 (Bull) in view of Kren. This rejection is respectfully traversed.

Claim 28 calls for a method of preparing and using a coil spring in a pressure relief valve and requires a) measuring the spring rate of the coil spring; b) modifying the spring so as to modify its spring rate to be within $\pm 2\%$ of a target spring rate, and c) building a pressure relief valve with the modified coil spring. The Office Action takes the position that Bull discloses a relief valve device, and that it would be desirable to have a valve with a different spring rate for varying applications. The Office Action then goes on to point out that Kren teaches a method of machining a "spring rate to be within 0.33% of a target spring rate" by cutting a spring from bar or stock material.

Even if these references taught what the Office Action says they teach, and could somehow be combined, the references do not make the invention of claim 28 obvious. There is no teaching or suggestion in Bull to either measure the spring rate of any spring, or to remove a portion of the spring. While Kren does suggest that a tighter tolerance in the variation of spring rates can be achieved by machining springs from

stock material rather than by winding the springs from wire, there is no suggestion of measuring the spring rate of a coil spring and then modifying that spring and using it to build a pressure relief valve, which is called for by claim 28.

If the references were combined, someone would manufacture a spring by machining, and use that spring in the valve of Bull. One would not measure the spring rate of a given coil spring, modify that spring to change its spring rate, and then use the modified spring in the valve of Bull.

Further, the combination of references is only made by hindsight efforts to recreate the invention. There is nothing in Bull or Kren that suggests that it is desirable to have a valve with a different spring rate for different applications as alleged in the Office Action. Instead, Bull teaches, in Col. 4, lines 52-66, how to adjust the spring force to achieve a desired spring force. There is no suggestion that the spring needs to have any specific spring rate, or that springs with different spring rates would be desirable for different applications.

Finally, there is no suggestion in either Bull or Kren of taking the coil spring, measuring its spring rate, modifying its spring rate, and then using the spring to make a pressure relief valve,

The Office Action asserts that in Kren, portions of bar or stock are cut "to reach the desired spring rate." There is nothing in Kren that explicitly teaches this. Even if this were true, there is nothing to suggest that in Kren a spring is first machined, and then its spring rate measured, and then further machined to reach a target spring rate. The Examiner conceded this point during the interview.

The Office Action asserts that some spring rate must be measured, because the springs produced are said to have a spring rate within 0.33% of a target spring rate. However, as explained before, what is more likely is that a spring is machined and tested, and if a different spring rate is needed, the design is changed and a new spring is machined. Kren teaches using "NC machinery" to cut the springs from stock material. This type of equipment would not normally be used to first cut a spring and then modify that same spring.

Claim 31 requires the spring rate to be modified by having a portion of the surface of the spring removed. Claim 33 requires the material be removed from the

outside diameter of the coil spring. There is no teaching or suggestion in Bull or Kren of modifying a coil spring rate by having a portion of the surface of the coil spring removed, let alone removed from its outside diameter.

Thus, all the claims under consideration in the application are allowable over the cited prior art. Further, since claim 28 is a generic claim, the allowability of claim 28 requires the species restriction to be withdrawn. Claims 29, 30, 32 and 34, dependent on claim 28, should be brought back into consideration and allowed.

As a final matter, it is noted that Bull was left off of the 892 form attached to the previous Office Action, and has still not been listed on an 892 form. The Examiner is requested to list the Bull reference on an 892 form so as to make the reference of record.

It is believed that the case is in condition for allowance. An early notice to that effect is respectfully requested.

Respectfully submitted,

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